

CLAIMS

What is claimed is:

1 1. A system for optically imaging, the system comprising:
2 (a) an array of cells for producing an electrical charge in response
3 to photon stimulation;
4 (b) a charge shift register configured to receive the electrical
5 charge produced by each cell in the array and to sequentially output the electrical
6 charge of each cell;
7 (c) at least two charge sensing nodes for accumulating charge
8 readable as a voltage; and,
9 (d) a charge demultiplexor configured to receive the output of the
10 charge shift register and to selectively distribute the output to each of the at least two
11 charge sensing nodes.

1 2. The system of claim 1 wherein the array of cells includes a charge
2 coupled device array.

1 3. The system of claim 1 further including at least one output buffer
2 configured to receive the voltage of each of the at least two charge sensing nodes.

1 4. The system of claim 1 further including at least one amplifier
2 configured to amplify the voltage from the at least two charge sensing nodes.

1 5. The system of claim 1 further including at least one analog to digital
2 converter configured to convert the voltage from the at least two charge sensing
3 nodes into a digital signal.

1 6. A method for producing a voltage signal segmented to represent an
2 output of an array of cells that produce a cell electrical charge in response to photon
3 stimulation, the method comprising:

4 (a) receiving each of the cell electrical charges from the cells in a
5 charge shift register;

6 (b) sequentially outputting the cell electrical charges from the
7 charge shift register to a charge demultiplexor;

8 (c) the charge demultiplexor selectively distributing the sequential
9 cell charges to one of at least two charge sensing nodes; and,

10 (d) sequentially reading a voltage produced by the cell charges in
11 at least one of the at least two charge sensing nodes.

1 7. The method of claim 6 wherein the charge demultiplexor selectively
2 distributing the sequential cell charges to one of at least two charge sensing nodes
3 includes the charge demultiplexor distributing one cell charge to each of the at least
4 two charge sensing nodes.

1 8. The method of claim 6 wherein the charge demultiplexor selectively
2 distributing the sequential cell charges to one of at least two charge sensing nodes
3 includes the charge demultiplexor distributing multiple cell charges to each of the at
4 least two charge sensing nodes.

1 9. A system for producing a voltage signal segmented to represent an
2 output of an array of cells that produce an electrical charge in response to photon
3 stimulation, the system comprising:

4 (a) a charge shift register configured to sequentially receive the
5 charge from each cell;

6 (b) at least two charge sensing nodes configured to accumulate
7 charge and output a voltage signal;

8 (c) a charge demultiplexor configured to sequentially distribute
9 each charge from the charge shift register to one of the at least two charge sensing
10 nodes.

1 10. The system of claim 9 further including at least one output buffer
2 configured to receive the voltage of each of the at least two charge sensing nodes.

1 11. The system of claim 9 further including at least one amplifier
2 configured to receive and amplify the voltage of each of the at least two charge
3 sensing nodes.

1 12. The system of claim 9 further including an analog to digital converter
2 configured to convert the voltage from the at least two charge sensing nodes into a
3 digital signal.

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